Eruption of Vesuvius
24 August 79

https://en.wikipedia.org/wiki/Pompeii#/media/File:Mt_Vesuvius_79_AD_eruption.svg

ERUPTION OF VESUVIUS

By 79 August 24, Pompeii had a population of 20,000, which had prospered from the region's renowned agricultural fertility and favourable location.

The eruption lasted for two days. The first phase was of pumice rain (lapilli) lasting about 18 hours, allowing most inhabitants to escape. That only approximately 1,150 bodies have so far been found on site seems to confirm this theory and most escapees probably managed to salvage some of their most valuable belongings; many skeletons were found with jewellery, coins and silverware.

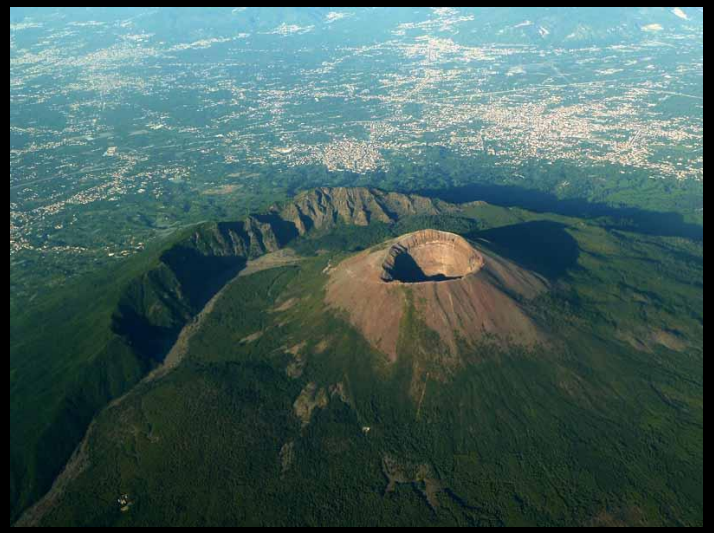
Mount Vesuvius is a somma–stratovolcano located on the Gulf of Naples in Campania, Italy, about 9 km (5.6 mi) east of Naples and a short distance from the shore. It is one of several volcanoes forming the Campanian volcanic arc. Vesuvius consists of a large cone partially encircled by the steep rim of a summit caldera, resulting from the collapse of an earlier, much higher structure.

The eruption of Mount Vesuvius in 79 AD destroyed the Roman cities of Pompeii, Herculaneum, Oplontis, Stabiae and other settlements. The eruption ejected a cloud of stones, ash and volcanic gases to a height of 33 km (21 mi), erupting molten rock and pulverized pumice at the rate of 6×105 cubic metres (7.8×105 cu yd) per second. More than 1,000 people are thought to have died in the eruption, though the exact toll is unknown. The only surviving witness account consists of two letters by Pliny the Younger to the historian Tacitus.
Vesuvius has erupted many times since. It is the only volcano on Europe's mainland to have erupted in the last hundred years. It is regarded as one of the most dangerous volcanoes in the world because 3,000,000 people live near enough to be affected by an eruption, with at least 600,000 in the danger zone. Eruptions tend to be violent and explosive; these are known as Plinian eruptions.

Vesuvius has a long historic and literary tradition. It was considered a divinity of the Genius type at the time of the eruption of AD 79: it appears under the inscribed name Vesuvius as a serpent in the decorative frescos of many lararia, or household shrines, surviving from Pompeii. An inscription from Capua to Iovi Vesuvio indicates that he was worshipped as a power of Jupiter; that is, Jupiter Vesuvius.

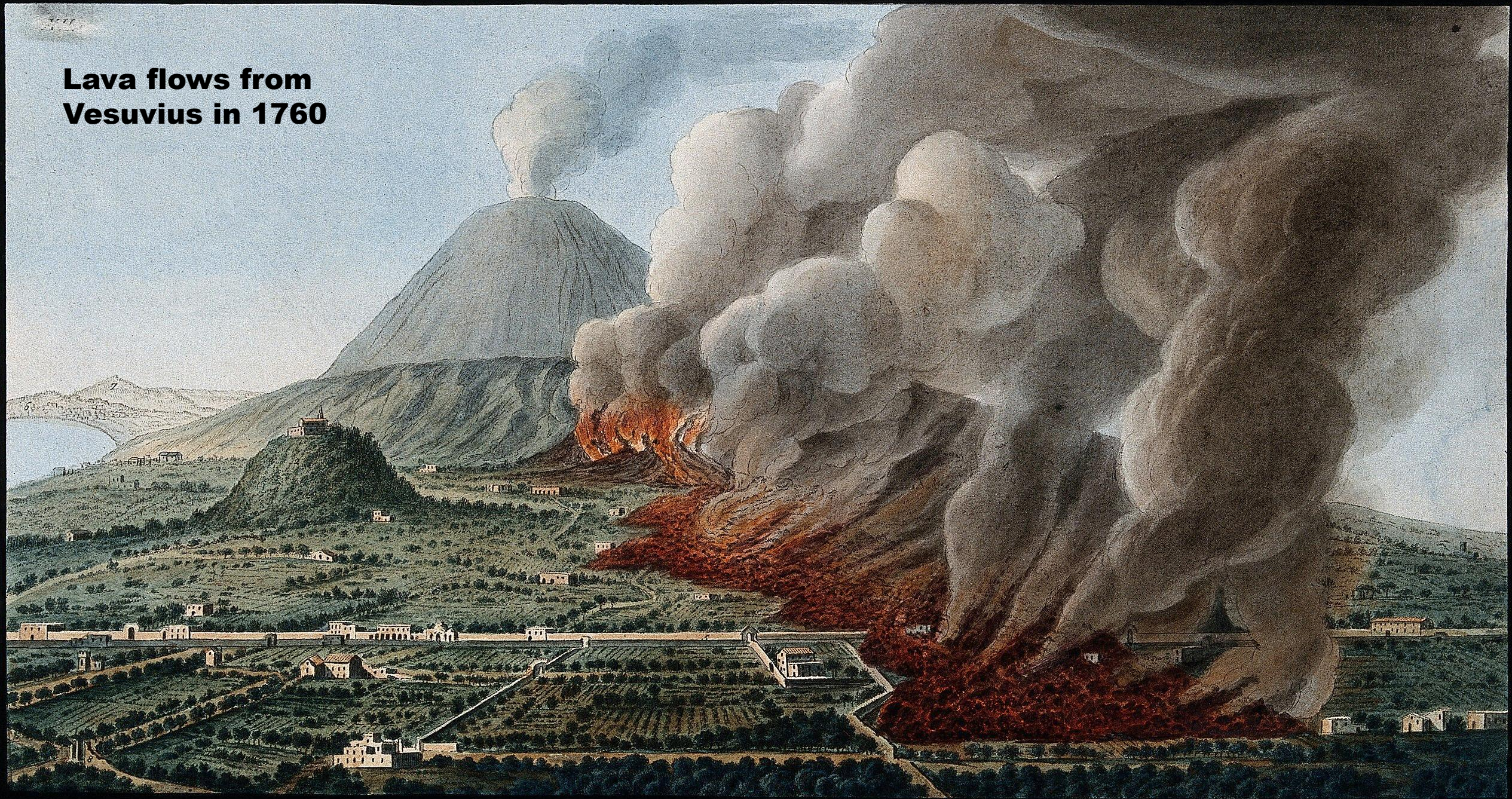
The Romans regarded Mount Vesuvius as being devoted to Hercules. The historian Diodorus Siculus relates a tradition that Hercules, in the performance of his labors, passed through the country of nearby Cumae on his way to Sicily and found there a place called "the Phlegraean Plain" (Φλεγραῖον πεδίον, 'fiery'), "from the mountain which of old spouted forth a huge fire [...] the mountain is called Vesuvius." It was inhabited by giant bandits, "the sons of the Earth. With the gods' assistance, he pacified the region and continued. The facts behind the tradition, if any, remain unknown, as does whether Herculaneum was named after it. An epigram by the poet Martial in AD 88 suggests that both Venus, patroness of Pompeii, and Hercules were worshipped in the region devastated by the eruption of 79.

City of Naples with Mount Vesuvius viewed from the Castel Sant'Elmo



Vesuvius was a name of the volcano in frequent use by the authors of the late Roman Republic and the early Roman Empire. Its collateral forms were Vesaevus, Vesevus, Vesbius and Vesvius. Writers in ancient Greek used Οὐεσούιον or Οὐεσούιος. Many scholars since then have offered an etymology. Given that peoples of varying ethnicity and language occupied Campania during the Roman Iron Age, the etymology depends to a large degree on the presumption of what language was spoken there at the time. Naples was settled by Greeks, as the name Nea-polis, "New City", testifies. The Oscans, an Italic people, lived in the countryside. The Latins also competed for the occupation of Campania. Etruscan settlements were in the vicinity. Other peoples of unknown provenance are said to have been there at some time by various ancient authors.

Mount Vesuvius has erupted many times. Numerous others preceded the eruption in AD 79 in prehistory, including at least three significantly larger; an example is the Avellino eruption around 1800 BC, which engulfed several Bronze Age settlements. Since AD 79, the volcano has also erupted repeatedly, in 172, 203, 222, possibly in 303, 379, 472, 512, 536, 685, 787, around 860, around 900, 968, 991, 999, 1006, 1037, 1049, around 1073, 1139, 1150, and there may have been eruptions in 1270, 1347, and 1500. The volcano erupted again in 1631, six times in the 18th century (including 1779 and 1794), eight times in the 19th century (notably in 1872), and in 1906, 1929 and 1944. There have been no eruptions since 1944, and none of the eruptions after AD 79 were as large or destructive as the Pompeian one.


Lava flows from
Vesuvius in 1760

The eruption of Vesuvius in 1794

The eruptions vary greatly in severity but are characterized by explosive outbursts of the kind dubbed Plinian after Pliny the Younger, a Roman writer who published a detailed description of the AD 79 eruption, including his uncle's death. On occasion, eruptions from Vesuvius have been so large that the whole of southern Europe has been blanketed by ash; in 472 and 1631, Vesuvian ash fell on Constantinople (Istanbul), over 1,200 kilometres (750 mi) away. A few times since 1944, landslides in the crater have raised clouds of ash dust, raising false alarms of an eruption.

Since 1750, seven of the eruptions of Vesuvius have had durations of more than five years; only Mount Etna has had as many long-duration eruptions in the last 270 years. The two most recent eruptions of Vesuvius (1875–1906 and 1913–1944) each lasted more than 30 years.
Vesuvius is still regarded as an active volcano, although its current activity produces little more than sulfur-rich steam from vents at the bottom and walls of the crater.

Layers of lava, ash, scoria and pumice make up the volcanic peak. Their mineralogy is variable, but generally silica-undersaturated and rich in potassium, with phonolite produced in the more explosive eruptions[27] (e.g. the eruption in 1631 displaying a complete stratigraphic and petrographic description: phonolite was firstly erupted, followed by a tephritic phonolite and finally a phonolitic tephrite).

Scientific knowledge of the geologic history of Vesuvius comes from core samples taken from a 2,000 m (6,600 ft) plus borehole on the flanks of the volcano, extending into Mesozoic rock. Cores were dated by potassium–argon and argon–argon dating. The area has been subject to volcanic activity for at least 400,000 years; the lowest layer of eruption material from the Somma caldera lies on top of the 40,000-year-old Campanian ignimbrite produced by the Campi Flegrei complex. The volcanic complex stands on a large, sedimentary plain.

25,000 years ago: Vesuvius started forming in the Codola Plinian eruption.

Vesuvius was then built up by a series of lava flows, with some smaller explosive eruptions interspersed between them. By this time, the volcano was 2,000 meters (6,560 feet) tall, with the summit being 500 meters (1,640 feet) east of the current summit.[

About 19,000 years ago: the style of eruption changed to a sequence of large explosive and caldera-forming Plinian eruptions, of which the AD 79 one was the most recent. The calderas are aligned in a roughly east–west direction, and all contributed to forming present-day's Somma caldera. The eruptions are named after the tephra deposits produced by them, which in turn are named after the place where the deposits were first identified:
18,300 years ago: the Basal Pumice (Pomici di Base) eruption, VEI 6, the original formation of the Somma caldera. The caldera's formation was asymmetric towards the west. The eruption was followed by a period of much less violent, lava-producing eruptions.
16,000 years ago: the Green Pumice (Pomici Verdoline) eruption, VEI 5.
Around 11,000 years ago: the Lagno Amendolare eruption, smaller than the Mercato eruption.
8,000 years ago: the Mercato eruption (Pomici di Mercato) – also known as Pomici Gemelle or Pomici Ottaviano, VEI 6.
Around 5,000 years ago: two explosive eruptions smaller than the Avellino eruption.

Volcanic tephra at Brown Bluff, Antarctica (2016)

3,800 years ago (19th century BC): the Avellino eruption (Pomici di Avellino), VEI 6; its vent was apparently 2 km (1.2 mi) west of the current crater and the eruption destroyed several Bronze Age settlements of the Apennine culture, including ancient Afragola. Several carbon dates on wood and bones offer a range of possible dates of about 500 years in the mid-2nd millennium BC. In May 2001, near Nola, Italian archaeologists using the technique of filling every cavity with plaster or substitute compound, recovered some remarkably well-preserved forms of perishable objects, such as fence rails, a bucket and especially in the vicinity, thousands of human footprints pointing into the Apennines to the north.

The settlement had huts, pots and goats. The residents had hastily abandoned the village, leaving it to be buried under pumice and ash in much the same way that Pompeii and Herculaneum were later preserved. Pyroclastic surge deposits were distributed to the northwest of the vent, travelling as far as 15 km (9.3 mi) from it, and lie up to 3 m (9.8 ft) deep in the area now occupied by Naples.

The volcano then entered a stage of more frequent, but less violent eruptions, until the most recent Plinian eruption, which destroyed Pompeii and Herculaneum. Evidence of these eruptions comes from badly preserved ashfall deposits that have been dubitatively assigned to either the Somma-Vesuvius complex, or the Phlegrean fields.

The last of these may have been in 217 BC. There were earthquakes in Italy during that year and the sun was reported as being dimmed by gray haze or dry fog. Plutarch wrote of the sky being on fire near Naples, and Silius Italicus mentioned in his epic poem Punica that Vesuvius had thundered and produced flames worthy of Mount Etna in that year. However, both authors were writing around 250 years later. Greenland ice core samples of around that period show relatively high acidity, which is assumed to have been caused by atmospheric hydrogen sulfide.

The volcano was then quiet (for 295 years, if the 217 BC date for the last previous eruption is true) and was described by Roman writers as having been covered with gardens and vineyards, except at the top, which was craggy. The volcano may have had only one summit at that time, judging by a wall painting, "Bacchus and Vesuvius", found in a Pompeian house, the House of the Centenary (Casa del Centenario).

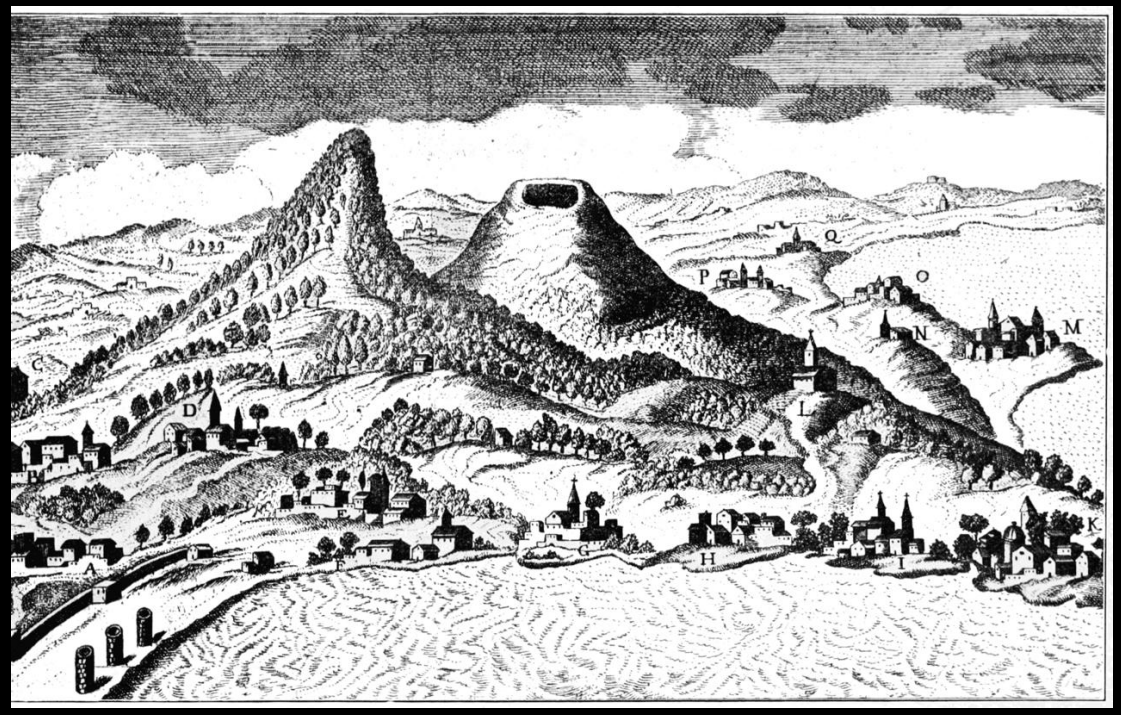
Several surviving works written over the 200 years preceding the AD 79 eruption describe the mountain as having had a volcanic nature, although Pliny the Elder did not depict the mountain in this way in his Natural History:

The Greek historian Strabo (c. 63 BC – c. 24 AD) described the mountain in Book V, Chapter 4 of his Geographica as having a predominantly flat, barren summit covered with sooty, ash-coloured rocks, and suggested that it might once have had "craters of fire". He also perceptively suggested that the fertility of the surrounding slopes may be due to volcanic activity, as at Mount Etna.
In Book II of De architectura, the architect Vitruvius (c. 80–70 BC –?) reported that fires had once existed abundantly below the peak and that it had spouted fire onto the surrounding fields. He described Pompeiian pumice as having been burnt from another species of stone.
Diodorus Siculus (c. 90 BC – c. 30 BC), another Greek writer, wrote in Book IV of his Bibliotheca Historica that the Campanian plain was called fiery (Phlegrean) because of the peak, Vesuvius, which had spouted flames like Etna and showed signs of the fire that had burnt in ancient history.

Pompeii, with Vesuvius towering above

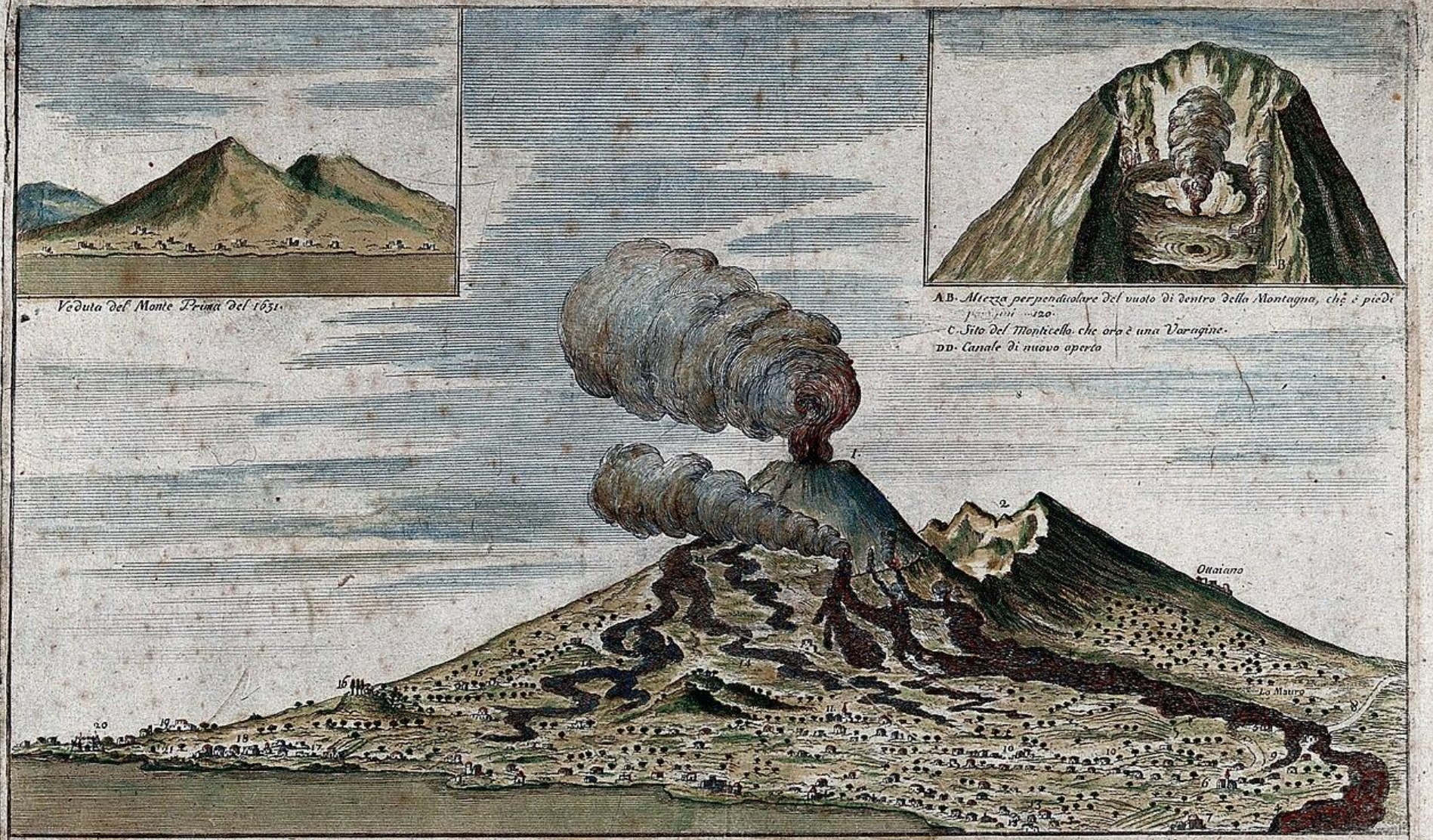
Of the many eruptions of Mount Vesuvius, a major stratovolcano in Southern Italy, its eruption in 1631 is the most destructive episode in recent history and one of the deadliest of all time.
Before it became active again in 1631, Vesuvius had remained for about five centuries in a state of quiescence with its last significant eruption since 1169. A minor eruption was recorded in 1500 by a singular source from Ambrosio Leone, however this event was likely caused due to a phreatic event, increased fumarolic activity, or major rockfall. Prior to the eruption, Mount Vesuvius was lush with dense vegetation. The lower slopes were lined with vineyards and orchards, while higher elevations housed groups of oak and chestnut trees.[4] Inside the crater, forests thrived along with three lakes from which pasturing herds drank from, however they would ultimately disappear due to rising temperatures as Vesuvius began its erupting process.

As early as August 1631, visible signs of Vesuvius' reawakening could be seen on the North flank of the Vesuvian cone, where sightings of increased fumarolic activity and nocturnal incandescence were reported. Increased local seismicity would also begin to be perceived starting in December 1631 with the strongest tremors being felt as far away as the Italian city of Napoli, culminating in a grade VII MCS shake on 15 December, followed by an intense earthquake swarm.



Napoli — Osservatorio del Vesuvio

4014 E. Ragozino edit. Galleria Umberto Napoli

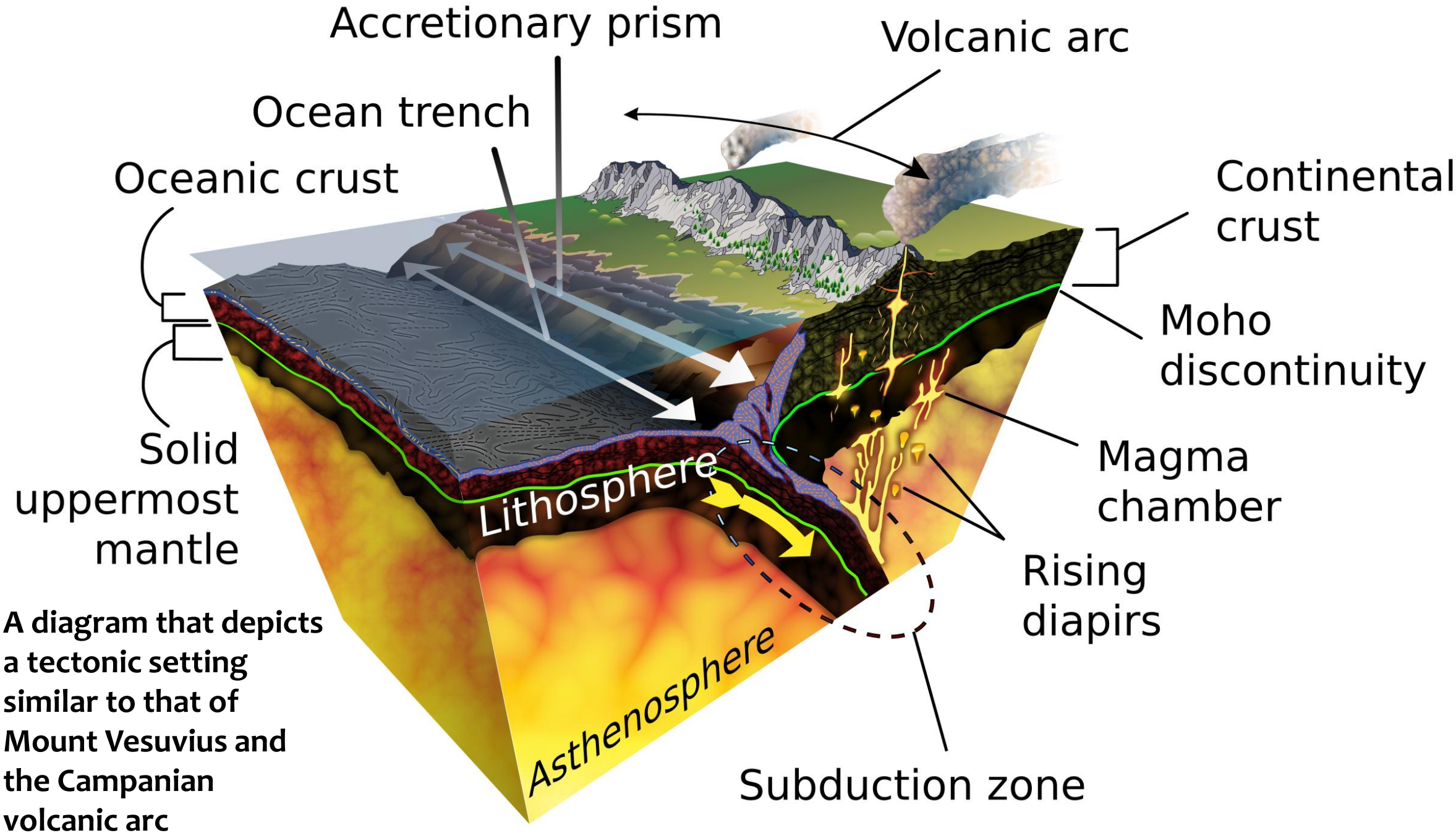

Veduta del Monte Prima del 1631.
AB. Altezza perpendicolare del vuoto di dentro della Montagna, che è piedi
C. Sito del Monticello che ora è una Voragine.
DD. Canale di nuovo aperto
Ottaiano
Lo Mauro

VEDVTA DEL MONTE VESVUIO DALLA PARTE DI ORIENTE CON LE NVOVE BOCCHE, E CORSÌ DI BITVME nel 1751

1. Bocca del Vesuvio antica, e nuova
2. Monte di Somma
3. Le nuove Bocche fatte con un forte tremuoto
4. Corsò del Bitume per dentro il Vallone del Fusciello
5. Casa del Buonincontro
6. Chiesa di SS. Maria, e Giacomo
7. Villa e Pallazzo dell Barone Massa
8. Via che da Bosco Reale porta allo Mavro
9. Osteria della Quercia
10. Bosco Reale
11. Le tre Case, è sua Chiesa
12. L'due Montetti delli Vuoli Sbollimento dell' Vesuvio di Pomici
13. Torre della SS.ma Annunziata
14. Lave antiche di Bitume, e nuove
15. Chiesa Villa, e Bosco delli Blasij
16. Camaldoli
17. Palazzo della Menza Arcivescovile di Napoli
18. Torre del Greco
19. La Real Villa di Portici e Resina
20. Lo Sortino del Granatello
21. Luogo dove si scavano l'Antichità dell' antico Erculano

Mount Vesuvius erupting in 1755, seen from the west, with two small views of the volcano in 1631, and of the volcano's crater in section

Vesuvius



A diagram that depicts a tectonic setting similar to that of Mount Vesuvius and the Campanian volcanic arc